12-7-2006

Low Power FM Transmitter for Portable MP3 Players

Kurt Handley
Indiana University - Purdue University Fort Wayne

Low Power FM Transmitter for Portable MP3 Players

by

Kurt Handley

December 7, 2006

ECET 491
Senior Design Report
Course Instructor: Paul Lin
Faculty Advisor: Gary Steffen
Technical Writing Instructor: Dr. Karen Griggs
Purdue University Fort Wayne Campus
Fort Wayne, Indiana

ABSTRACT

Portable MP3 players have become extremely popular for their ability to store and play an enormous collection of songs due to the 12:1 compression ratio. They are also popular for their compact packages that operate on batteries. However, the only way to listen to music stored on the devices is through headphones. As a user it would be convenient to listen to music stored on the device through a car stereo, home entertainment center, or any music device with an FM receiver. This project addresses the problem by designing and manufacturing a low power FM transmitter system. The transmitter emits radio frequency emissions between 88 and 108 MHz using frequency modulation (FM), so any commercial FM receiver can demodulate the signal for playback. It features a tuning knob for selecting different frequencies and a volume knob for adjusting sound intensity. The design uses a Maxim Integrated IF (intermediate-frequency) voltage-controlled oscillator (VCO) with differential output, a Microchip PIC16F877 microcontroller with enhanced FLASH programming ability, and a liquid crystal display (LCD) with an integrated HD44780 compatible controller/driver.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

Figure **Page**

Table **Page**